What is Claimed is:

1. A purified and isolated nucleic acid encoding GLUTx.

2. The nucleic acid of Claim 1 that is derived from a human, a mouse or a rat.

3. The nucleic acid of Claim 2 that is derived from a human.

4. The nucleic acid of Claim 2 that is derived from mouse.

5. The nucleic acid of Claim 2 that is derived from a rat.

6. The nucleic acid of Claim 3 which encodes the amino acid sequence for GLUTx shown in Figure 10.

7. The nucleic acid of Claim 6, having the nucleotide sequence for GLUTx as shown in Figure 9.

8. The nucleic acid of Claim 4 which encodes the amino acid sequence for GLUTx shown in Figure 12.

9. The nucleic acid of Claim 8, having the nucleotide sequence for GLUTx as shown in Figure 11.

10. The nucleic acid of Claim 5 which encodes the amino acid sequence for GLUTx shown in Figure 14.

11. The nucleic acid of Claim 10, having the nucleotide sequence for GLUTx as shown in Figure 13.

12. A vector comprising a nucleic acid encoding GLUTx.

13. A host cell transformed by the vector of Claim 12.

14. A method for producing recombinant GLUTx comprising growing a host cell transformed with the vector of Claim 12 and isolating the recombinant GLUTx from said culture.

15. The method of Claim 14, wherein said host cell is a prokaryotic cell.

16. The method of Claim 14, wherein said host cell is a eukaryotic cell.

17. A purified GLUTx protein or an analogue thereof.

18. The purified GLUTx protein of Claim 17 which is recombinantly produced.

19. A nucleic acid probe which hybridizes to nucleic acid encoding GLUTx.

20. The nucleic acid of Claim 1 having one or more mutations.

21. The nucleic acid of Claim 20, wherein the mutations are selected from the group consisting of a point, insertion, rearrangement or deletion mutation.

22. An agent that binds to the protein of Claim 17.

23. The agent of Claim 22, which is an antibody, a peptide, a protein, a nucleic acid, a drug, or antisense nucleic acid.

24. The agent of Claim 23 which is an agonist of GLUTx.

25. An isolated nucleic acid comprising a nucleotide sequence which is at least 80% homologous with the nucleic acid sequence of Claim 1.

26. An isolated nucleic acid comprising a nucleotide sequence which is at least 85% homologous with the nucleic acid sequence of Claim 1.

27. An isolated nucleic acid comprising a nucleotide sequence which is at least 90% homologous with the nucleic acid sequence of Claim 1.

28. An isolated nucleic acid comprising a nucleotide sequence which is at least 95% homologous with the nucleic acid sequence of Claim 1.

29. An isolated nucleic acid comprising a nucleotide sequence which is at least 98% homologous with the nucleic acid sequence of Claim 1.

30. A non-human, transgenic animal model comprising a nucleic acid encoding GLUTx incorporated into some of the somatic cells of said animal.

31. The animal model of Claim 30, wherein said nucleic acid encodes a functional GLUTx protein.

32. The animal model of Claim 31, wherein said nucleic acid has one or more mutations.

33. An agent that binds to the nucleic acid of Claim 1.

34. An agent that enhances the expression of the nucleic acid of Claim 1.

35. The agent of Claim 34, which is a transcription factor, an activator, or a repressor.

36. A method for screening for an agent that binds to the nucleic acid of Claim 1 comprising contacting the nucleic acid with an agent of interest and assessing the ability of the agent to bind to the nucleic acid.

37. A method for screening for an agent that enhances the expression of the nucleic acid of Claim 1 comprising contacting a cell transformed with a vector comprising the nucleic acid, and assessing the effect of the agent on expression of the nucleic acid.

38. A method for screening for an agent that binds to the protein of Claim 17 comprising contacting the protein with an agent of interest and assessing the ability of the agent to bind to the protein.

39. A method of treating type-II diabetes comprising administering to a subject a nucleic acid molecule comprising a nucleotide sequence encoding the amino acid sequence of Figure 10, such that said nucleic acid sequence is expressed in target cells of the patient thereby alleviating the type-II diabetes.

40. The method of Claim 39, wherein the nucleic acid is transfected into target cells by infection with a replication defective virus or by transfection with a liposome comprising said nucleic acid.

41. The method of Claim 40, wherein the target cells are skeletal muscle cells.

42. The method of Claim 41, wherein the nucleic acid molecule comprises the nucleotide sequence of Figure 9.

43. A method of treating type-II diabetes in a subject comprising administering to a subject the agent of Claim 24 or 34 with a physiologically acceptable carrier in an amount effective to treat type-II diabetes in the subject.

add C1

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Katz, Ellen

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